UGC AUTONOMOUS IV-B.TECH-II-Semester End Examinations (Regular) - April - 2025 **GLOBAL POSITIONING SYSTEM**

[Time: 3 Hours]

used in GPS signals?

Note: This question paper contains two parts A and B. Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A (20 Marks)

1. a)	Define the GPS Operation Segment.	[2M]
b)	What is GAGAN, and how does it enhance GPS performance?	[2M]
c)	What is anti-spoofing (AS) in GPS?	[2M]
d)	How is the GPS satellite position calculated?	[2M]
e)	Consider a GPS signal encountering a tropospheric delay of 10 meters. Calculate	[2M]
	the impact of this delay on position accuracy if the signal travels for 1000 km	
f)	How do ephemeris data errors and clock errors impact GPS accuracy?	[2M]
g)	What does the GEO Uplink subsystem do in the WAAS system?	[2M]
h)	Explain the role of the GEO Downlink system in WAAS.	[2M]
i)	Name two military application of GPS.	[2M]
j)	How is GPS used in surveying?	[2M]

PART-B

(50 Marks)

2.	What is the system architecture of GPS? Explain the functions of the space	[10M]
	segment, control segment, and user segment in the GPS system	
	OR	
3.	Describe the User Receiving Equipment in GPS. What are the key components of a GPS receiver, and how do these components process signals to calculate the user's position and velocity?	[10 M]
4.	Explain the components of a GPS signal. Discuss the purpose of each component and the properties and power levels of the GPS signals transmitted from satellites.	[10M]
5.	Compare and contrast the satellite construction of GPS and GALILEO. Discuss the differences in their satellite constellations, signal structure, and operational features	[10M]
6.	Discuss the importance of antenna design in GPS receivers. How do different antenna types affect signal reception and accuracy?	[10M]
7	UN	[10] /]
1.	Describe the tropospheric error in GPS. Give the explanation of errors which are	[10M]

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(ECE)

[Max. Marks: 70]

8 R 8. Discuss the concept of Local Area Differential GPS (LADGPS) and what are the [10M] advantages and limitations WADGPS?

OR

- 9. What is GPS/INS integration? Discuss the architectures used for integrating GPS [10M] with an Inertial Navigation System (INS) and the advantages of such integration in enhancing navigation performance
- 10. Explain the use of GPS in surveying. Discuss the different techniques used in GPS [10M] surveying and how GPS improves the accuracy and efficiency of land surveys

OR

11. Describe the process of GPS position determination. How do GPS receivers use [10M] RINEX in GPS Applications.
